Ordering number: EN 1128F



LA3373

Monolithic Linear IC

Pilot Cancel-Provided PLL FM MPX Demodulator for Car Stereos

The LA3373 is a DIP-16 package version of the LA3375 that contains 2 functions required to prevent skip noise and to cancel pilot signal. It is a multiplex IC for use in FM car stereo applications.

Functions

- . Pilot canceler (Level follow-up type)
- . Stereo noise controller (SNC function)
- . High-cut controller (HCC function)
- . Automatic selection between stereo and monaural
- . VCO oscillation stop

Features

- . Low distortion (0.05% typ. 300mV input mono)
- . Good ripple rejection of power supply (35dB typ.)
- . Wide operating voltage range (V_{CC}=6.5V to 14V)

Maximum Ratings at T_a=25°C

				unit
Maximum Supply Voltage	V_{CC}max		16	V
Lamp Drive Current	$I_L$max		40	mA
Allowable Power Dissipation	$P_d$max	T_a≦45°C	520	mW
Operating Temperature	Topg		-20 to +70	°C
Storage Temperature	Tstg		-40 to +125	°C

Recommended Operating Conditions at T_a=25°C

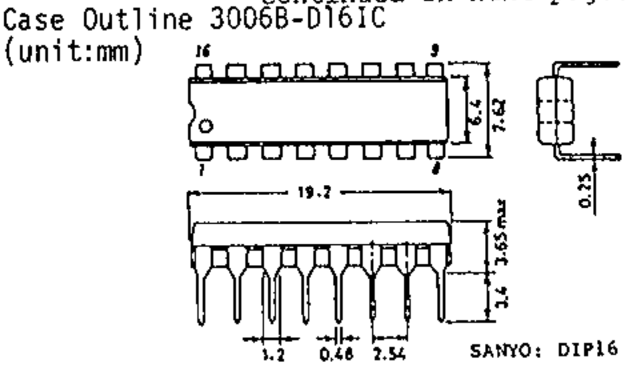
			unit
Recommended Supply Voltage	V_{CC}	6.5 to 14	V
Input Signal Voltage	v_i	200 to 300	mV

Operating Characteristics at T_a=25°C, V_{CC}=10V, v_i=300mV, f=1kHz, L+R=90%, pilot=10%,

		See specified Test Circuit.	min	typ	max	unit
Quiescent Current	Icco			22	28	mA
Channel Separation	Sep		40	50		dB
Monaural Distortion	mono THD	mono=300mV		0.05	0.2	%
Stereo Distortion	ST THD	main		0.05	0.2	%
Lamp Light-up Level	V_L	L+R=90%, pilot=10%	50	85	130	mV
Hysteresis	hy			3	6	dB
Capture Range	CR	pilot=30mV		±3		%
Output Signal Level	V_O	sub	150	215	300	mV
S/N Ratio	S/N	Rg=20kohms	68	74		dB
		Rg=10kohms	65	78		dB

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Case Outline 3006B-D16IC
(unit:mm)



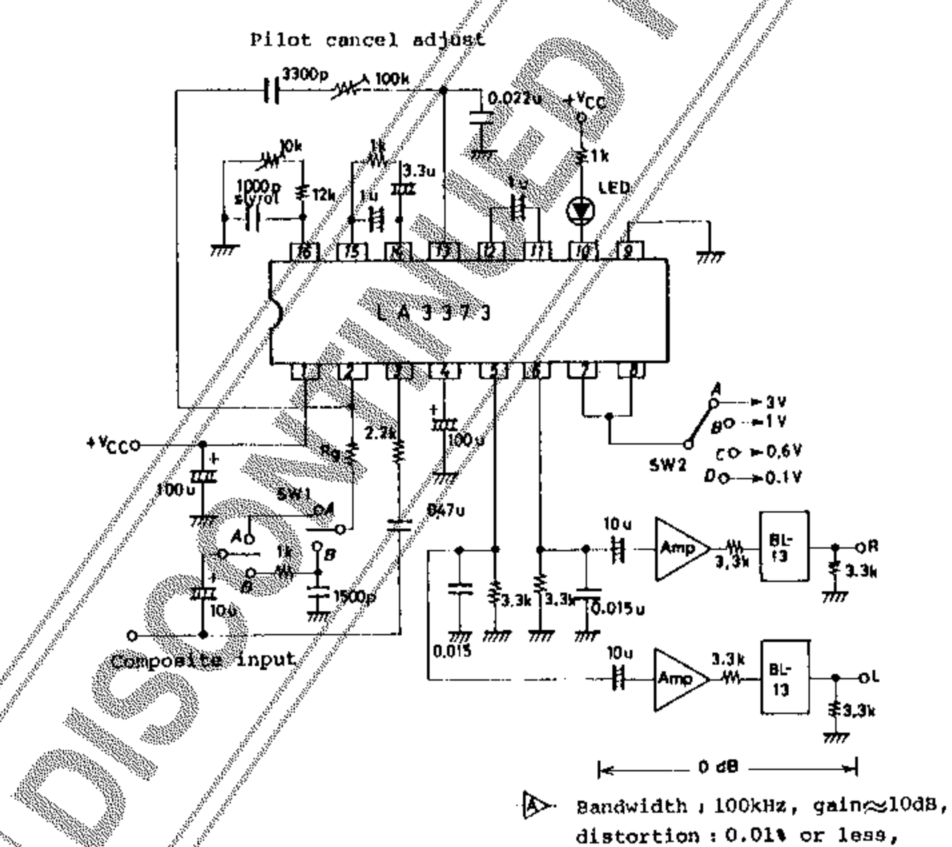
SANYO: DIP16

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			min	typ	max	unit
Input Resistance (Pin 3)	r_i			20		kohm
SCA Rejection	SCA_{rej}			80		dB
Allowable Input Voltage	v_i	THD=1%,Rg=20kohms	700	900		mV
		THD=1%,Rg=10kohms		450		mV
SNC Output Attenuation	$A_{tt}SNC$	V_8=0.6V,L-R=90%, pilot=10%	-8.5	-3.0	-0.3	dB
SNC Output Voltage	v_o sub	V_8=0.1V,L-R=90%, pilot=10%			5	mV
HCC Output Attenuation	A_{tt}HCC(1)	V_7=0.6V,L+R=90%, pilot=10%	-15.0	-6.0	-0.5	dB
	A_{tt}HCC(2)	V_7=1V,L+R=90%, pilot=10%	-2.0		0	dB
Power Supply Ripple Rejection	R_r			35		dB
VCO Stop Voltage	VCO stop			7.3		V
Channel Balance	CH Ba			0.5	1.5	dB
Pilot Cancel	CLp		20	27		dB

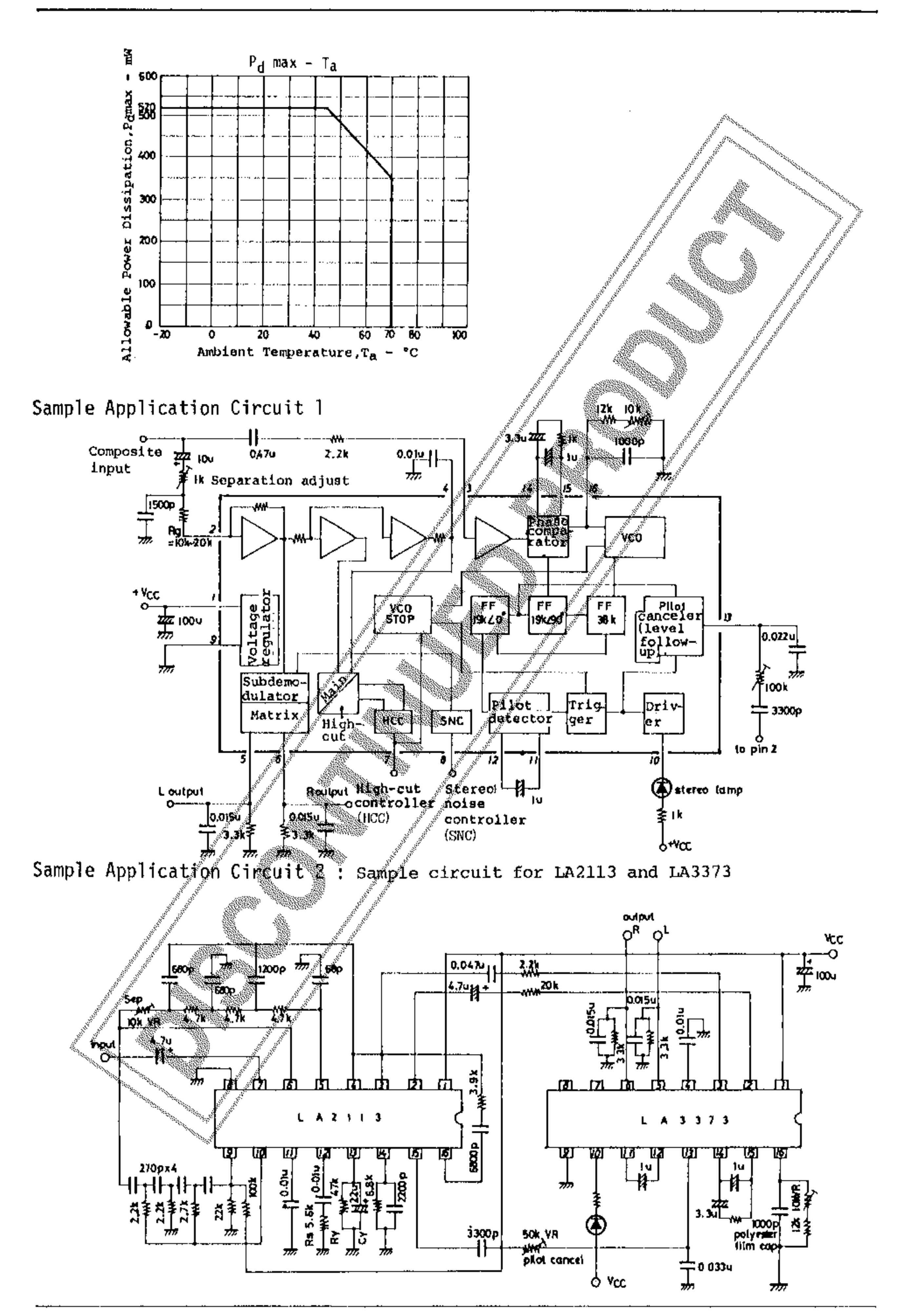
Test Circuit



Bandwidth : 100kHz, gain≈10dB, distortion : 0.01% or less, input impedance : 330kohms or more

* SW-1 : Set to A for test of characteristics other than separation.

* SW-2 : Set to A for test of characteristics other than HCC, SNC.


Pd max - Ta
Allowable Power Dissipation, Pdmax - mW
Ambient Temperature, Ta - °C
Sample Application Circuit 1
Composite input
1k Separation adjust
Rg =10k-20k
Voltage regulator
Subdemodulator
Matrix
Main
High-cut
HCC
SNC
VCO STOP
Phase comparator
VCO
FF 19k∠0°
FF 19k∠90°
FF 38k
Pilot canceler (level follow-up)
Pilot detector
Trigger
Driver
to pin 2
stereo lamp
L output
R output
High-cut controller (HCC)
Stereo noise controller (SNC)
Sample Application Circuit 2 : Sample circuit for LA2113 and LA3373
input
output
Sep 10k VR
LA2113
LA3373
pilot cancel
50k VR
polyester film cap
DISCONTINUED PRODUCT

Proper cares in using sample application circuits

1. Adjust separation with 10kohm variable resistor in low-pass filter.
2. Adjust R_g for noise detect sensitivity in strong to medium electric fields. Set at an adequate value.
3. Adjust noise AGC with C_y, R_y so that noise suppression in medium to weak electric fields is attained effectively.
4. Adjust pilot cancel with 50kohm variable resistor connected to pin 15 of the LA2113.
5. By varying the value of 1uF capacitor connected across pins 11 and 12 of the LA3373, response speed for pilot cancel to follow up level is varied. However, decreasing the value causes distortion to worsen.
6. Pilot cancel adjust
   Sample application circuit 2 is taken as an example. Assume input signal consists of pilot signal alone. Connect an oscilloscope and a vacuum tube voltmeter to pin 2 of the LA2113. Set their ranges as V : 200mV/div AC, H : 20usec/div.
   If waveform on the oscilloscope is 
   turn pilot cancel control so that waveform becomes as shown below.

   Then, adjust pilot cancel variable resistor so that the reading on the vacuum tube voltmeter is minimized.
   In applications where the LA3373 alone is used (Sample application circuit 1), use a vacuum tube voltmeter with 19kHz B.P.F. connected. Connect a probe of 19kHz B.P.F. to L output and R output and adjust pilot cancel variable resistor so that carrier leak level at output pins (pins 5, 6) is minimized.

*For applications and characteristics of the LA3373/LA2113, refer to the catalog of the LA2110.

: For detailed description and data, refer to the catalog of the LA3375.